REMARKS

The Office Action mailed May 25, 2005 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1, 5, 6, 10, 11, 13, and 15 are now pending in this application. Claim 14 was previously cancelled. Claims 2-4, 7-9, 12, 14, and 16-28 are newly cancelled. Claims 1-13 and 15-28 stand rejected.

The rejection of Claims 26-28 under 35 U.S.C. § 112, first paragraph is respectfully traversed.

Claims 26-28 have been cancelled. For this reason, the rejection of Claims 26-28 under 35 U.S.C. § 112, first paragraph no longer applies and should be withdrawn.

The rejection of Claims 1-23 under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. in view of Hsieh et al. and either Bjorkholm or Pelc is respectfully traversed.

The inclusion of Claim 14 in this grouping appears to be an error on the part of the Office, as Claim 14 was previously cancelled.

This rejection no longer applies to claims 2-4, 7-9, 12, 14, and 16-23, which have been cancelled.

Even assuming, *arguendo*, that Yamazaki et al. is as described by the Office, Yamazaki et al. does not show a plurality of alternating discrete filters and air paths in pairs oriented in a Z-direction configured so that individual detector rows receive filtered or unfiltered x-ray beam data, a processor operationally coupled to said detector array, and as an object being imaged and said filter and air path pairs move relative to one another in the Z-direction, said processor configured to perform a first spectral analysis at a time T0 using said first data and said second data to determine a location of an analyte in an area of interest in the object being imaged; and as said relative motion in a Z-direction continues, perform subsequent spectral analyses using different said filter and air path pairs to determine dynamic information of the movement of the analyte.

Instead, Yamazaki et al. teach or suggest, in a first embodiment shown in Figures 3 and 4, an x-ray tube used without a filter and with detectors 1 and 2 provided to detect different energy characteristics from each other (see col. 4, lines 13-15). A second embodiment shown in Figures 5-7 again shows no x-ray filter, and a detection system comprised of two types of detection series that are the detector 1 composed of a photodiode 35 and a scintillator 31, and the detector 2 composed of a photodiode 35 and a scintillator 32 whose thickness is smaller than that of scintillator 31 (see col. 6, lines 60-64). A third embodiment shown in Figures 8-10 does not provide a plurality of alternating discrete filters and air paths in pairs, but rather a wedge having a variable thickness, shape or material provided in close proximity to x-ray tube 10, thereby differentiating the quality of radiation or the energy characteristics of the x-ray beams (see col. 7, lines 22-29). A fourth embodiment shown in Figures 11-13 also does not provide a plurality of alternating discrete filters and air paths in pairs, but rather shows only an x-ray tube having an applied voltage that is differentiated (see col. 8, lines 2-4.)

The most relevant modification appears to be shown in Figures 15A and 15B, which show a single discrete filter and air path rather than plural discrete filter and air path pairs. It is submitted that this arrangement does not teach or suggest a plurality of alternating discrete filters and air paths in pairs oriented in a Z-direction configured so that individual detector rows receive filtered or unfiltered x-ray beam data, a processor operationally coupled to said detector array, and as an object being imaged and said filter and air path pairs move relative to one another in the Z-direction, said processor configured to perform a first spectral analysis at a time T0 using said first data and said second data to determine a location of an analyte in an area of interest in the object being imaged; and as said relative motion in a Z-direction continues, perform subsequent spectral analyses using different said filter and air path pairs to determine dynamic information of the movement of the analyte.

Hsieh et al. is directed to a method and apparatus for imaging a heart with a scanning computed tomography (CT) imaging system. Hsieh is silent and adds nothing to Yamazaki et al. regarding plural discrete filter and air path pairs.

Bjorkholm is directed to a detector that includes two serially arranged detectors. A first detector preferentially absorbs lower level radiant energy and the second detector preferentially absorbs higher radiant energy (see Abstract). Although it is said that the detectors taught in Bjorkholm can be applied to detectors used in conjunction with a fan beam (see col. 6, lines 48-62), the invention is discussed in detail only in connection with flying spot beams, and plural discrete filter and air path pairs are neither taught nor suggested. Therefore Bjorkholm adds nothing to Yamazaki et al. or Hsieh et al., either alone or in combination, regarding plural discrete filter and air path pairs.

Pelc is directed to a CT apparatus for scanning compact structures associated with a larger body. The apparatus uses a radiation source that produces a reduced field of view to simply construction and reduce exposure of the larger body. Although a stationary filter 64 is shown and is said to be constructed of a material exhibiting absorption predominately in frequencies or energy between two spectral lobes, there is no teaching or suggestion that filter 64 includes plural discrete filter and air path pairs. Therefore, Pelc adds nothing to Yamazaki et al., Hsieh et al., or Bjorkholm, either alone or in any combination, regarding plural discrete filter and air path pairs.

In contrast, Claim 1, as herein amended, recites in part, "... a plurality of alternating discrete filters and air paths in pairs oriented in a Z-direction configured so that individual detector rows receive filtered or unfiltered x-ray beam data, ... a processor operationally coupled to said detector array, and as an object being imaged and said filter and air path pairs move relative to one another in the Z-direction, said processor configured to: ... perform a first spectral analysis at a time T0 using said first data and said second data to determine a location of an analyte in an area of interest in the object being imaged; and as said relative motion in a Z-direction continues, perform subsequent spectral analyses using different said filter and air path pairs to determine dynamic information of the movement of the analyte." See paragraph [0035] of the application as originally filed and Figures 6, 7, and 12 of the application as originally filed. Thus, it is submitted that Claim 1 is patentable over any combination of Yamazaki et al., Hsieh et al., Bjorkholm, and Pelc.

Claim 15, as herein amended, recites, in part, "A method A method for determining the presence of an analyte in an object with a computed tomographic (CT) imaging system having a detector array comprising a plurality of detector cells arranged in rows, said detector array including detector cells that are at least one of manufactured from different materials that are sensitive to different portions of the x-ray spectrum or coated with different scintillating materials that are sensitive to a different portion of the x-ray spectrum and said imaging system further having a plurality of alternating discrete filters and air paths in pairs oriented in a Z-direction configured so that individual detector rows receive filtered or unfiltered x-ray beam data, said method comprising: ... performing a first spectral analysis at a time T0 using said first data and said second data to determine a location of an analyte in an area of interest in an object being imaged and moved in the Z-direction relative to the filter and air path pairs; and as relative motion in a Z-direction continues, perform subsequent spectral analyses using different said filter and air path pairs to determine dynamic information of the movement of the analyte." Therefore, it is submitted that Claim 15 is similarly patentable over any combination of Yamazaki et al., Hsieh et al., Bjorkholm, and Pelc for reasons similar to those given with respect to Claim 1.

Claims 5, 6, 10, 11 and 13 depend directly upon Claim 1. When the recitations of Claims 5, 6, 10, 11, and 13 are considered in combination with the recitations of Claim 1, it is submitted that Claims 5, 6, 10, 11, and 13 are likewise patentable over any combination of Yamazaki et al., Hsieh et al., Bjorkholm, and Pelc.

For the above reasons, it is requested that the rejection of Claims 1-23 under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. in view of Hsieh et al. and either Bjorkholm or Pelc be withdrawn.

The rejection of Claims 24-28 under 35 U.S.C. 102(b) as being anticipated by Yamazaki et al. is respectfully traversed.

Claims 24-28 have been cancelled. For this reason the rejection of Claims 24-28 under 35 U.S.C. 102(b) as being anticipated by Yamazaki et al. no longer applies and should be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

Alan L. Cassel
Registration No. 35,842
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070